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# 1965 RESEARCH INDEX

*Other*  
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Projects being carried on  
within Ontario Government  
Departments and Agencies in:

AGRICULTURE  
ARCHITECTURE  
CHEMISTRY  
EARTH SCIENCES  
ENGINEERING  
FORESTRY  
LIFE SCIENCES  
PHYSICS

Published by the Ontario Economic Council





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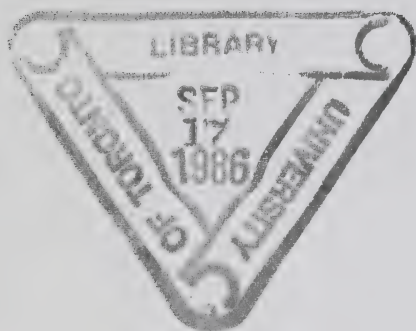
**ENGINEERING**

**FORESTRY**

**LIFE SCIENCES**

**PHYSICS**

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## FOREWORD

This is an index of research projects being undertaken in mid-1965 within Ontario Government Departments and by several specialized agencies which report to the Government.

It has two primary purposes.

First, the growing technological complexity of our industrial activities, from agriculture to manufacturing, make it desirable to facilitate communication between those engaged in research and those who can put their findings into practical economic form. The index, therefore, lists the principal investigators of each project so that sources of detailed information can be more readily available to interested persons.

Second, the rapid expansion of research activities in universities, in government laboratories, and in industry has made it difficult to follow what is being done in any one field. The National Research Council, Ottawa, is currently preparing a similar index of research conducted in Canadian universities. This index, in conjunction with that of the National Research Council, will, it is hoped, assist those responsible for decisions regarding research policy and funding to discover which areas of research are being actively investigated and where there may be gaps.

It will be noted that the index does not attempt to include all areas of research but has been restricted initially to the types of investigation which may be of interest to the industrial sector. For this first edition, industry has not been asked to contribute a listing of privately financed projects since the majority of these could be of proprietary interest to the company. To be useful, the index should be revised annually and it is hoped that future editions may contain such generalized descriptions of research activities as industrial research laboratories care to provide.

The Ontario Economic Council wishes to acknowledge the excellent



co-operation received from all Departments and Agencies concerned in compiling this index and the editorial direction of Dr. A. D. Misener, M.A., Ph.D., F.R.S.C., M.E.I.C. of the University of Toronto. We will welcome any suggestions for revision or expansion.

W. H. CRANSTON,  
*Chairman.*

November, 1965.

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This list is compiled in accordance with the returns submitted by the various research groups. The names appearing here are those to whom further enquiries regarding specific projects should be addressed. It will be noted that there is a great variation in the listing of associated research personnel in the body of the index. This probably reflects the variation of practice within the different departments and agencies. The editors have not attempted to impose any arbitrary criteria in this matter though they feel that some uniformity would be desirable in the future.

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## SUBJECT INDEX

The principal investigators were asked to classify each of their projects under one or two titles selected from a list of "fields of investigation". These general classifications will be found below (e.g. Analytical Chemistry, Electrical Engineering, Parasitology) together with a listing of projects under descriptive words also supplied by the investigators (e.g. Herbicides, Polymers, Power Transmission, Pavements). In addition the editors have selected certain key words from the detailed description of the projects which specify the object or material on which the research is being done (e.g. corn, concrete, iron, paper, sweet-potatoes, etc.).

By arranging these three categories of description in one alphabetical list, the subject index becomes a convenient cross reference. Each project will appear under at least three headings, sometimes more (for example, Project #111 appears under the headings of Agronomy, Soil Fertility, Hay, Oats, Corn and Soybeans). The range of work in a particular science is illustrated by the number of projects appearing under its general title. Under Agronomy there are 63 projects, under Geochemistry 1 project, and under Test Methods and Measurements (also listed as Measurements and Test Methods) there are 29 projects.

No attempt has been made to modify the individual preferences as to subject titles appropriate to a project so it has been sometimes necessary to use several listings to cover an entire field of investigation, for example anyone interested in the general field of paving materials should consult the projects listed under Asphalt, Cement, Pavement as well as Test Methods and Measurements.

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<sup>1</sup> Canada and Dominion Sugar Company, Chatham, Ontario.

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<sup>1</sup> Department of Science; University of Guelph.

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AGRICULTURE  
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LIFE SCIENCES  
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# 1966 RESEARCH INDEX

Projects being carried on  
within Ontario Government  
Departments and Agencies,  
and in a number of  
Companies operating in  
Ontario in

AGRICULTURE  
CHEMISTRY  
EARTH SCIENCES  
ENGINEERING  
FORESTRY  
LIFE SCIENCES  
PHYSICS



## FOREWORD

This second edition of the Ontario research index has realized one of the hopes expressed in the 1965 edition, namely, the inclusion of significant projects currently being pursued by the industrial sector. An invitation to industry to participate resulted in the submission of 97 projects from 20 companies with research and development operations in Ontario.

The purposes of the Index, which have governed its compilation and format, remain the same. These are briefly:

“to assist those responsible for decisions regarding research policy and funding to discover which areas of research are being actively investigated and where there may be gaps.”  
and;

“to facilitate communication between those engaged in research and those who can put their findings into practical economic form.”

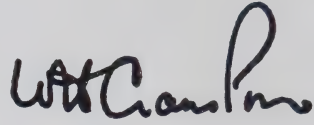
It should be noted that the number of projects listed under a particular discipline does not necessarily indicate the degree of activity in that discipline. Many responders have, quite helpfully, grouped many similar investigations under one project heading. Agriculture, for example, there are actually 407 current projects although a superficial look would indicate 48.

As in the first edition, the very large contribution of University research is not included since this can be determined from the publications of the National Research Council. Similarly, we have continued to restrict the submissions to those fields of investigation which are presently of most interest to industry. The absence of Architecture, this year, is due to the fact that no replies were recorded in this category.

The Ontario Economic Council is most appreciative of the favourable comment on and unexpectedly large number of domestic and foreign requests for the 1965 Index which indicate the usefulness of this activity. It also wishes to acknowledge the excellent cooperation received from all Departments and

Agencies of Government and the research directors of companies who have made this a more useful compilation.

We will welcome any suggestions for future revision or expansion.

A handwritten signature in black ink, appearing to read "W. H. Crampton". The signature is fluid and cursive, with a large, looping "P" at the end.

*Chairman.*

December, 1966.

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Ontario.

Canadian General Electric Company Limited,  
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Toronto 4, Ontario.

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Ontario.

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21 Toro Road,  
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P.O. Box 2484,  
1255 Brydges Street,  
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This list is compiled in accordance with the returns submitted by the various research groups. The names appearing here are those to whom further enquiries regarding specific projects should be addressed. It will be noted that there is a great variation in the listing of associated research personnel in the body of the index. This probably reflects the variation of practice within the different departments and agencies. The editors have not attempted to impose any arbitrary criteria in this matter though they feel that some uniformity would be desirable in the future.

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## SUBJECT INDEX

The principal investigators were asked to classify each of their projects under one or two titles selected from a list of "fields of investigation". These general classifications will be found below (e.g. Analytical Chemistry, Electrical Engineering, Parasitology) together with a listing of projects under descriptive words also supplied by the investigators (e.g. Herbicides, Polymers, Power Transmission, Pavements). In addition the editors have selected certain key words from the detailed description of the projects which specify the object or material on which the research is being done (e.g. corn, concrete, iron, paper, sweet potatoes, etc.).

Because certain investigations are of particular interest to a definite region of Ontario, studies of this sort have been additionally indexed under their regional designation (e.g. Georgian Bay, Lake Ontario, Northern Ontario, Ottawa River, etc.).

By arranging these four categories of description in one alphabetical list, this Subject Index becomes a convenient cross reference. Each project appears under at least three headings sometimes more.

No attempt has been made to modify the individual preferences as to subject titles appropriate to a project so it has been sometimes necessary to use several listings to cover an entire field of investigation, for example anyone interested in the general field of paving materials should consult the projects listed under Asphalt, Cement, Pavement as well as Test Methods and Measurements.

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<sup>1</sup> Jointly with Federal Government under DIR Program.

<sup>2</sup> On behalf of Atomic Energy of Canada Limited.



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# 1967 RESEARCH INDEX

Projects being carried on  
within Ontario Government  
Departments and Agencies,  
and in a number of  
Companies operating in  
Ontario in

AGRICULTURE  
CHEMISTRY  
EARTH SCIENCES  
ENGINEERING  
FORESTRY  
LIFE SCIENCES  
PHYSICS

Published by the Ontario Economic Council

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## FOREWORD

This third edition of the Ontario Research Index has confirmed the hopes of the Ontario Economic Council in that it can now claim to catalogue significant research undertaken in this province by government departments and agencies and by industries primarily based in Ontario.

University research is recorded by other agencies.

The purposes of this index are:

“to assist those responsible for decisions regarding research policy and funding to discover which areas are being actively investigated and where there may be gaps,”

and;

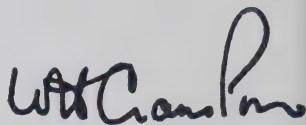
“to facilitate communication between those engaged in research and those who can put their findings into practical economic form.”

As before, coverage is restricted to those areas likely to produce the greatest industrial benefits – natural science and engineering. The fields of economics and sociological development are, of course, major factors in providing the ability to utilize the advances here described, but they must be assessed from other sources.

The Ontario Economic Council is gratified that the industrial sector has significantly increased its contribution to this edition. The unexpectedly large number of requests for the Index from Canadian and foreign sources has provided us with an opportunity to extend over a much wider area the potential for research cooperation. We thank those departments and agencies of the Ontario Government and particularly those Ontario companies which have made this summary possible. We also thank Dr. A. D. Misener, editor of these Indices, for believing that this is a useful activity and agreeing to assist us with its production.

We claim no perfection, only a good job started. Most thinking people agree that we are where we are because of ideas; we have many in Ontario.

This is an attempt to catalogue some of them for the benefit of all. Your suggestions as to future additions and revisions will, as in the past, be most welcome.

A handwritten signature in dark ink, appearing to read "W. H. Crampton". The signature is fluid and cursive, with a large, looping "P" at the end.

*Chairman,  
Ontario Economic Council.*

NOVEMBER, 1967.

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## INDEX OF INVESTIGATORS

The purpose of this Index is to provide names of people who may be contacted for the purpose of obtaining further information regarding the projects here listed. Different agencies have different practices in this regard, some prefer you to contact the person most familiar with the work, others prefer that the director of the project or the director of the research division be the initial contact.

In the Directory of Projects, the first name in each project listed is the one the responders have indicated should be your initial contact.

This index lists all the individuals associated with the research. It is our method of giving due credit to those scientists and engineers who are properly proud of their achievements described in this volume.

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## SUBJECT INDEX

As in previous editions, this index has been designed to be the basic cross-reference for any individual who wants to know what is being done in Ontario (Universities excepted) with respect to research on a particular item, idea or area. We have therefore listed all submissions to the Index under at least four headings:

- (a) the field of investigation (designated by the investigator) such as analytical chemistry, electrical engineering, metallurgy;  
and
- (b) materials or products, such as herbicides, power transmission, computer applications;  
and
- (c) identifiable objects e.g., corn, iron or sweet potatoes, concrete;  
and
- (d) regions such as, Georgian Bay, Ottawa River, Lake Ontario.

In addition to this listing we have selected certain key words from the description provided by the responders and have added these to this Index. For example, anyone interested in the general field of paving materials should consult the projects listed under asphalt, cement, sealing compounds, as well as test methods and measurements.

Obviously this cross-index cannot be complete so we urge any reader to use his own intelligence and skim through the final and significant part of the Index. That is the Directory of Projects starting on page 43. Here you will find, under appropriate headings, all the research, all the people, and all the points of contact you need to discover what is happening in research in the scientific and engineering fields in Ontario.

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# **AGRICULTURE**

## **I**



## DEPARTMENT OF AGRICULTURE

### Horticultural Research Institute Vineland Station, Ontario

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<sup>1</sup> University of Western Ontario.

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<sup>1</sup> On behalf of the Atomic Energy of Canada Ltd.

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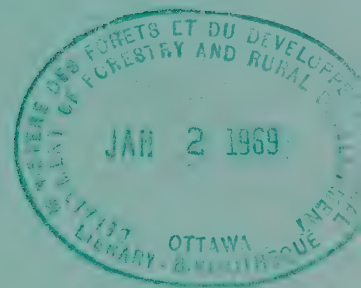
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# RESEARCH INDEX ONTARIO • 1968



**AGRICULTURE  
ARCHITECTURE  
EARTH SCIENCES  
CHEMISTRY  
ENGINEERING  
FORESTRY  
LIFE SCIENCES  
PHYSICS**

**and a Summary  
of Reported Industrial  
Research Facilities**

Published by  
The Ontario Economic Council  
950 Yonge Street  
Toronto, Ontario

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591







# **1968 RESEARCH INDEX**

**Projects being carried on  
within Ontario Government  
Department and Agencies,  
and in a number of  
Companies operating in  
Ontario in**

**AGRICULTURE  
ARCHITECTURE  
CHEMISTRY  
EARTH SCIENCES  
ENGINEERING  
FORESTRY  
LIFE SCIENCES  
PHYSICS**

**and  
a Summary of Reported Industrial  
Research Facilities**

**Published by the Ontario Economic Council**

3M/11/68





## FOREWORD

This fourth edition of the Research Index is a continuation of the efforts of the Ontario Economic Council to catalogue annually significant research projects in the natural sciences, engineering and architecture, being undertaken by Ontario government departments and agencies and by industries in this province.

To the 1968 edition has been added a new section. In it a start has been made to set out the research capabilities of private companies operating in Ontario. Some 77 of the latter are listed.

By initiating this publication, the Ontario Economic Council has sought to broaden the knowledge of, and to expand the private and public investment in research in those areas which contribute to a higher rate of economic growth. Indeed it was felt that failure to encourage such support was to jeopardize the future well-being of the people of this province and of this nation.

In no way should this be interpreted to denigrate the vital role of pure research. It simply recognizes that application to often very localized problems and potentials is vital if we are to ensure for the citizenry a rising standard of living.

We have to capitalize, with all the resource technology available, on current assets. Indeed applied research is perhaps the most significant production tool in the hands of modern management.

\* \* \* \*

We would particularly like to thank those companies and the departments and agencies of the Ontario government whose contributions make this Index possible. We would also commend the editor, Dr. A. D. Misener, for his continuing interest and capable administration.

While there has been a steadily growing demand for copies of this Index, both within Canada and abroad, the Council's concern was to initiate rather

than perpetually to sponsor. Enclosed with this edition is a return address postcard through which it would be appreciated if you would indicate whether you find the publication of sufficient interest to warrant its continuance and what revisions or restructuring should be incorporated in future editions if such are indicated.

NOVEMBER, 1968

A handwritten signature in dark ink, appearing to read "W. H. Crampton". The signature is fluid and cursive, with a large, prominent loop at the end of the last name.

*Chairman*  
*Ontario Economic Council.*

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In the Directory of Projects, the first name in each project listed is the one the responders have indicated should be your initial contact.

This index lists all the individuals associated with the research. It is our method of giving due credit to those scientists and engineers who are properly proud of their achievements described in this volume.

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## SUBJECT INDEX

As in previous editions, this index has been designed to be the basic cross-reference for any person who wants to know what is being done in Ontario (Universities excepted) with respect to research on a particular item, idea or area. We have therefore listed all submissions to the Index under at least three headings:

- (a) the field of investigation (designated by the investigator) such as analytical chemistry, electrical engineering, metallurgy;  
and
- (b) materials or products, such as herbicides, power transmission, computer applications;  
and
- (c) identifiable objects e.g., corn, iron or sweet potatoes, concrete.

In addition to this listing we have selected certain key words from the description provided by the responders and have added these to this Index. For example, anyone interested in the general field of paving materials should consult the projects listed under asphalt, cement, sealing compounds as well as test methods and measurements.

Obviously this cross-index cannot be complete so we urge any reader to use his own intelligence and skim through the final and significant part of the Index. That is the Directory of Projects starting on page 59. Here you will find, under appropriate headings, all the research, all the people, and all the points of contact you need to discover what is happening in research in the scientific and engineering fields in Ontario.

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Copper, Nickel, Lead, and Zinc Deposits of Ontario (revision of  
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Gold Deposits of Ontario

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<sup>1</sup> On behalf of Atomic Energy of Canada Limited.<sup>2</sup> On behalf of Champlain Power Products.<sup>3</sup> On behalf of the St. Lawrence Seaway Authority.

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<sup>1</sup> With A. R. Barringer of Barringer Research Limited.

<sup>2</sup> With A. Stevens of McPhar Geophysics Limited.

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- BERST, A. H., LEWIS, C. A., SMITH, J. — To describe the survival growth and life history of splake (hybrid between lake trout and brook trout) planted in various parts of Lake Huron. Their contributions to the fishery and their vulnerability to sea lamprey predation ..... 7016
- CHRISTIE, W. J. — To determine and describe the factors causing the violent fluctuations in abundance of whitefish in the Bay of Quinte and Lake Ontario. This is an outgrowth of a study which demonstrated that the traditional whitefish fry plantings did not contribute significant numbers of fish to the fishery .... 7017
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To survey the parasites occurring in the important fish of Lake Ontario and to discover which of those may be important influences on abundance of fish .....	7025
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To describe the horizontal and vertical distribution of smelt in Lake Erie and to determine the environmental factors which influence that distribution. This will allow prediction of the location of smelt concentration and help in the development of new fishing gear; and will contribute towards an ability to predict long range trends in the fishery .....	7028
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- To determine the potential use of fish toxicants in the management of lakes for brook trout ..... 7035
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- LEWIS, C. A., — To document the contribution of successive year classes of small mouth bass to the sport fishery of South Bay. These data test the reliability of predictions of the quality of bass angling based on temperature index known to influence class year strength of bass in their first year of life ..... 7042
- LEWIS, C. A., HARRISON, J. — To develop a general program of research on Lake Superior replacing former program of Fisheries Research Board — Principally dealing with Lake Trout ..... 7043
- LEWIS, C. A., RECKAHN, J., COLLINS, J., KWAIN, T. — To discuss and describe the factors influencing the strength of whitefish

- year classes throughout Lake Huron. Fluctuations of abundance, related to variable year class strength is a major problem. Whitefish stocks, now known to be discrete, are being sampled in areas such as North Channel, Georgian Bay, South Lake Huron, South Bay, as a means of establishing the relative strength of year classes in the fisheries. These are then related to the limnological and meteorological conditions prevailing during their early life in search of relationships ..... 7044
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- To measure the sub-lethal effects of detergents on smallmouth basses, e.g., do they affect reproduction, feeding, respiration, activity? ..... 7046
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- To determine the factors influencing the growth of smallmouth bass during their first year of life and to determine their effect on the ability of the bass to survive their first winter ..... 7048
- MARTIN, N. V. — To compare plankton feeding with fish feeding lake trout in terms of growth rate, age at maturity, population stability, egg production quality of fish produced, and management techniques necessary . . . . . 7049
- To discover the reasons for the poor survival of hatchery reared young lake trout when planted in lakes, e.g. Opeongo of the Laurentian Shield. The role of soft water vs. hard water is now being investigated ..... 7050
- MARTIN, N. V., JERMOLAJEV, E. — To study the very early life history and ecology of lake trout to discover whether this stage is important in determining the numbers of lake trout in a population from year to year ..... 7051
- MCCOMBIE, A. M. — To study the plant plankton of the Bay of Quinte, Lake Ontario, and make qualitative and quantitative comparisons with 1945 data with a view to determining the effects of and rate of eutrophication (aging and enrichment) 7052



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- To study specific physical (temperature, seiches, currents) and chemical (oxygen, hardness, pH, etc.) conditions of water in relation to areas and times specified as important to particular fisheries problems ..... 705
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- RECKAHN, J. — To measure the survival and growth of young fish in Lake Huron and to describe their feeding habits ..... 705
- To document through experimental fishing and sampling the long term changes in fish populations vulnerable to pound nets in South Bay, Lake Huron. Such changes have been found to be roughly representative of the situation throughout Lake Huron as a whole ..... 705
- To discover and study the factors influencing class year strength (Survival of white fish during their first year of life) in South Bay. Directed at young fish-locations at various times of year, and methods of trapping to study ..... 705
- RYDER, R. A. — To discover and describe a practical index or indices that will be useful in predicting the fish production potential of lakes ..... 705
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<sup>1</sup> In cooperation with the University Hospital, London, Ontario.

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<sup>1</sup> In collaboration with the Department of Pathology, Queen's University, Kingston, Ontario.



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<sup>1</sup> Defence Industrial Research Grant-Defence Research Board.



- PIECZONKA, W. A., THOMPSON, D. — Epitaxial growth of silicon films, studies on growth dynamics and perfection of grown films ..... 8023

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**Product Research Centre, Sheridan Park, Ontario**

- LEYLAND, B. K., LAURIENTE, D. H. — Lead for noise control in buildings ..... 8024

**Computing Devices of Canada Limited**

- BADHWAR, L. K., JEAN, B. — Meteorological sound ranging studies. Develop improved mathematical models for sound ray calculation, using reported met. information ..... 8025
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<sup>1</sup> On behalf of Atomic Energy of Canada Limited.

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- ATHERTON, D. L. — Practical applications of superconductivity particular to DC generators and magnets for research, particle accelerators and M.H.D. generators ..... 8037

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- HUTCHINS, R. — Underwater seismic research. The determination of the physical and other engineering properties of the bottom and sub bottom of water covered areas by acoustic methods<sup>1</sup> ..... 8038

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<sup>1</sup> With the Defence Research Board under the DIR program.

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**Spar Aerospace Products Limited**

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**ADDRESSES OF PARTICIPATING COMPANIES  
INCLUDING A SUMMARY OF  
REPORTED INDUSTRIAL RESEARCH FACILITIES**



## INDUSTRIAL RESEARCH FACILITIES

### ABITIBI PAPER COMPANY, LIMITED

Toronto-Dominion Centre, Toronto 1, Ontario.

### ABREX SPECIALTY COATINGS, LIMITED

280 Wycroft Road, Oakville, Ontario.

*President:* G. R. Bailey.

*Fields of Interest:* Research and development, consulting, electrodeposition of organic coatings, design of equipment for electrodeposition of paint and manufacture of organic coatings.

*Major Activity of Company:* Mfg. 20%, R&D 55%, Testing and Evaluation 5%, Consulting 15%, Other 5%.

*Research Facilities:* 1,000 square feet of completely equipped laboratory research offices.

*Research Personnel:* G. R. Bailey, President; F. R. Crowne, B.Sc. (Hons.), M.A.Sc.; H. J. Barton, Ph.D. (Chemical Engineering); G. Young, B.A.Sc.

*Laboratory Staff:* Full time technicians 4, summer students 2.

*Recruiting Contact:* F. R. Crowne.

### A.D.M. CHEMICALS

Division of Valvoline Oil Company of Canada Limited,  
200 Fairbank Avenue, Toronto 19, Ontario.

*President:* S. A. Cooke.

*Fields of Interest:* Company Products — protective coating resins and foundry sand binders. Research Activities — specialty fatty chemicals and novel polymer systems.

*Major Activity of Company:* Mfg. 85%, R&D 5%, Testing and Evaluation 10%.

*Research Facilities:* A modern 3,000 sq. ft., air-conditioned laboratory. Instrumentation includes infrared and ultraviolet-visible spectrophotometers, a nuclear magnetic resonance spectrometer and an automatic recording titrator.

*Laboratory Staff:* Inorganic chemists 1, organic chemist 1, chemical engineer 1, chemists 2, technicians 4.

*Recruiting contact:* R. C. Burrows.

## INDUSTRIAL RESEARCH FACILITIES

### AEROFALL MILLS LIMITED

2640 South Sheridan Way, Clarkson, Ontario.

*President:* Robert C. Meaders.

*Fields of Interest:* Mineral dressing, cement raw material processing  
Industrial natural and synthetic minerals processing.

*Major Activity of Company:* Mfg., R&D, Testing and Evaluation.

*Research Facilities:* New facilities now being equipped at Clarkson.

*Research Personnel:* R. R. Turner, Technical Director; Clarence Powell,  
Research Engineer; Dr. H. R. Goodfellow, Senior Research Engineer.

*Laboratory Staff:* Laboratory superintendent 1, laboratory technician 1  
research technician 1.

### ALUMINUM LABORATORIES LIMITED

Box 8400, Kingston, Ontario

### ATLAS STEELS COMPANY

Welland, Ontario.

### ATOMIC ENERGY OF CANADA, LIMITED

P.O. Box 93, Ottawa, Ontario.

### THE BALLDRIVE COMPANY

Box 634, Galt, Ontario.

*Vice-President:* John S. Couse.

*Fields of Interest:* Very high speed and low speed hydraulic radial piston  
motors and pumps using free balls as pistons. Rolling contact  
elastohydrodynamic lubrication, hertzian stresses analysis.

*Major Activity of Company:* Mfg. 35%, R&D 35%, Testing and Evaluation  
30%.

*Research Facilities:* Model shop, engineering department, high speed testing  
equipment both for endurance and performance tests. Torque sensor  
(60,000 RPM). Pressure transducers, etc.

*Research Personnel:* John S. Couse, P. Eng.; Kenneth G. Vacing, P. Eng.  
George Pain, Technician; R. G. Duncan, Tool maker.

*Laboratory Staff:* Special assemblies manager 1, quality control manager 1

*Recruiting Contact:* John S. Couse.



## INDUSTRIAL RESEARCH FACILITIES

### BARRINGER RESEARCH, LIMITED

304 Carlingview Drive, Rexdale, Ontario

*President:* Dr. A. R. Barringer.

*Fields of Interest:* Development, manufacture and sale of (a) air pollution measuring instruments, (b) geophysical exploration instruments. Research and Development of electro-optical techniques for instrumentation. R&D of in radio and electromagnetic methods of prospecting.

*Major Activity of Company:* Mfg. 20%, R&D 26%, Exploration Services 41%, Leases and Rentals 13%.

*Research Facilities:* UV, visible & IR spectrometers, 4,000 sq. ft. lab space allocated to R&D use. Low gradient magnetometer test facility Electro-optical laboratory. Photographic facilities. Electronic instrument development facilities.

*Research Personnel:* Mr. Joseph MacDowall, General Manager; Mr. W. Cox, Electronic Engineer; Mr. A. J. Moffatt, Electronic Engineer; Mr. D. McNeill, Senior Physicist; Mr. J. Davies, Physicist and Assistant to General Manager.

*Laboratory Staff:* Electronics 7, physicists 2, mathematicians 2, draftsmen 3, machine shop 3, mechanical technicians 3, photographer 1, research pilot 1.

*Recruiting Contact:* Mr. Joseph MacDowall.

### BRITISH AMERICAN RESEARCH AND DEVELOPMENT COMPANY

(Division of the British American Oil Company)  
2489 North Sheridan Way, Sheridan Park, Ontario.

### CANADA PACKERS, LIMITED

95 St. Clair Avenue, West, Toronto 7, Ontario.

*President:* W. F. McLean.

*Fields of Interest:* (1) Full line of meat products manufactured in plants across Canada; (2) Edible oil products — shortening, margarine, frying fat, salad oil; (3) Feeds for poultry, swine, beef and dairy animals;

## INDUSTRIAL RESEARCH FACILITIES

- (4) Fine chemicals, pharmaceuticals, fatty acids, gelatin; (5) Leather; (6) Poultry products, cheese and miscellaneous.

*Major Activity of Company:* Mfg.

*Research Facilities:* The research facilities are located at 2211 St. Clair Avenue, West, Toronto 9, Ontario. These include 40,000 sq. ft. of laboratory space plus pilot plant facilities in oils, meats and fine chemicals. A library, taste-panel area, animal rooms and other specialized facilities are provided.

*Research Personnel:* Leon J. Rubin, Director of Research; H. W. Barnett, Assistant Director of Research; P. Ziegler, Assistant Director of Research; G. W. Burgess, Laboratory Administrator; R. G. Donovan, Group Leader, Leather; T. F. Massiah, Group Leader, Chemical Development; F. M. Misiak, Librarian; H. R. Nordin, Group Leader, Meats; C. H. Perrin, Group Leader, Analysis Research; B. F. Teasdale, Group Leader, Oils; B. VanBinnendyk, Statistics; R. Witty, Group Leader, Biochemistry.

*Recruiting Contact:* W. G. Burgess, Laboratory Administrator.

## CANADIAN CANNERS, LIMITED

44 Hughson Street South, Hamilton, Ontario.

*President:* L. H. Johnston.

*Fields of Interest:* Processed fruits and vegetables, soups, catsup, pickles, jellies, marmalade, glace fruit, other food specialties, and can manufacturing.

*Major Activity of Company:* Mfg. 100%.

*Research Facilities:* Completely equipped Food Research Laboratory.

*Research Personnel:* C. J. Ross, Research Manager.

*Laboratory Staff:* Chemists 7, microbiologists 3, technicians 7, other 4.

*Recruiting Contact:* R. G. Teasdale, Industrial Relations Manager.

## CANADIAN GAS ASSOCIATION

55 Scarsdale Road, Don Mills, Ontario.

*Managing Director:* Mr. W. H. Dalton.

*Fields of Interest:* Certification and testing laboratories, sponsorship of fuel

## INDUSTRIAL RESEARCH FACILITIES

fired appliance standards, research and development for the gas industry.

*Major Activity of Company:* R&D 15%, Testing and Evaluation 65%, Other 20%.

*Research Facilities:* Complete testing facilities for gas, oil and electrical appliances and accessories.

*Research Personnel:* H. Wank, Director, Laboratories and Engineering. R. L. Hay, Chief Engineer.

*Laboratory Staff:* Professional engineers 3, engineering technologists 3, technologists 3, technicians 10, other 4.

*Recruiting Contact:* Director, Laboratories and Engineering.

### CANADIAN GENERAL ELECTRIC COMPANY, LIMITED

214 King Street West, Toronto 1, Ontario.

*President:* J. H. Smith.

*Major Activity of Company:* R&D 7%, Other 93%.

*Research Facilities:* Facilities are decentralized and contiguous to manufacturing plants. The character and size of each facility is governed by the nature and type of products associated with each plant and its growth objectives.

*Recruiting Contact:* H. E. J. Holloway, Manager Engineering and Scientific Recruitment.

### CANADIAN STRUCTURAL CLAY ASSOCIATION

4824 Yonge Street, Willowdale, Ontario.

### CANADIAN WESTINGHOUSE COMPANY, LIMITED

Box 510, Hamilton, Ontario.

*President:* W. J. Cheesman.

*Fields of Interest:* Electrical and electronic equipment, air brakes, hydraulic drives, etc.

*Major Activity of Company:* Mfg. 98%, R&D 2%.

*Research Facilities:* Central research and development labs, with chemical,

## INDUSTRIAL RESEARCH FACILITIES

electrical, metallurgical and mechanical section. Electronics, divisional labs. Other divisional development labs.

*Research Personnel:* R. O. Morse, Manager, Research and Development Laboratories; W. A. Pieczonka, Manager, Solid State Section.

*Laboratory Staff:* Engineers and scientists 40, technicians 42, others 16.

*Recruiting Contact:* Mrs. I. Watson.

## CHAMPLAIN POWER PRODUCTS, LIMITED

951 Martin Grove Road, Rexdale, Ontario.

## CHEMICAL PROJECTS, LIMITED

36 Greensboro Drive, Rexdale, Ontario.

*President:* Dr. Louis A. Pogorski.

*Fields of Interest:* Research and development in cryogenics, isotope analysis and separation, air pollution, geochemistry, explosives, trace gas analysis, gas purification. Generation of design data, technical and economic feasibility studies, development and fabrication of special instruments and equipment, geochemical and pollution surveys.

*Research Facilities:* 10,000 sq. ft. research laboratory consisting of analytical lab, physico-chemical lab, chemistry lab, instrument and electronics lab, chemical engineering lab, machine and fabrication shop. Equipment includes mass spectrometer, trace gas analyzer, chromatographs, synthesis trains, reactors, distillation and adsorption units, fully equipped machine shop, etc. Field testing facilities.

*Research Personnel:* Dr. L. A. Pogorski, Research Director; Dr. C. C. Chan, Mas Spectrometry; P. Williams, Physical Chemistry; E. Reimer, Geophysics; Dr. G. Galdi, Chemistry.

*Laboratory Staff:* Chemical engineers 1, mechanical engineers 1, physical chemists 1, chemists 2, geophysicists 1, technicians 6, other staff 10.

*Recruiting Contact:* B. Girard.

## COMINCO LIMITED

630 Dorchester Boulevard, West, Montreal 2, Quebec.

## INDUSTRIAL RESEARCH FACILITIES

### COMPUTING DEVICES OF CANADA, LIMITED

P.O. Box 508, Ottawa 4, Ontario.

*President:* Mr. J. F. Taylor.

*Fields of Interest:* Research and Development. Products — Air and marine navigation, oceanics, ASW, photo optical, telecommunications, digital computer, industrial and scientific systems design, development and management; aerospace research; survey and exploration, field engineering, installation and maintenance services.

*Major Activity of Company:* Mfg. 64%, R&D 23%, Testing and Evaluation 10%, Consulting 3%.

*Research Facilities:* R&D building 65,000 sq. ft., 0.5 and 65" hypervelocity light gas guns (high vacuum) 4" smooth bore conventional gun, high-g electronics assemble and test laboratory 16" and 5" vertical launch guns (HARP) Sigma 7 and IBM 360 computers.

*Research Personnel:* R. R. Hoge, Vice-President, Engineering; G. P. T. Wilenius, Vice-President, Marketing; I. J. Irvine, R. Montgomery, R. S. Gruno, T. F. Potts, J. R. B. Murphy.

*Laboratory Staff:* Mechanical engineers 2, physicists 2, mathematician 1, instrument technicians 2, mechanical technician 1.

*Recruiting Contact:* R. R. Hoge, Vice-President, Engineering.

### DENVER LABORATORIES (CANADA), LIMITED

#### L. D. CRAIG, LIMITED

Bell Craig Laboratories for Medical Research.  
451 Alliance Avenue, Toronto 9, Ontario.

*President:* Mr. Carleton Ashley.

*Fields of Interest:* Effect of proteolytic enzymes on the gastro-intestinal absorption, tissue penetration and pharmacological activity of drugs.

*Research Facilities:* Complete facilities for biological and chemical research and analysis.

*Research Personnel:* Dr. A. Wohlman, Director; M. Syed, R. Raminez.

*Laboratory Staff:* Technicians 2.

*Recruiting Contact:* Dr. A. Wohlman, Director of Research.



## INDUSTRIAL RESEARCH FACILITIES

### DESITRON COMPANY LIMITED

198 Hymus Road, Scarborough, Ontario.

*President:* Mr. Folke A. Walther.

*Fields of Interest:* Industrial heating and drying of microwave miniaturization of certain components.

*Major Activity of Company:* Mfg. 70%, R&D 15%, T&E 10%, Consulting 5%.

*Research Facilities:* Low Power Test Facilities from 1 GC-24 GC 5KW CW Tests in Heating region.

*Research Personnel:* G. Zelinger, B.A.Sc.

*Laboratory Staff:* Draftsman 1, technician 1.

*Recruiting Contact:* W. B. Scott, General Manager.

### DILWORTH, SECORD, MEAGHER AND ASSOCIATES, LIMITED

4195 Dundas Street, West, Toronto 18, Ontario.

*President:* P. B. Dilworth.

*Fields of Interest:* All phases of engineering, analysis, design, supervision, development, testing and research. Specialty areas include aeronautical, nuclear and industrial engineering with emphasis upon the design of research facilities and specialized mechanical equipment. Research activities are concentrated in the same general areas.

*Major Activity of Company:* R&D 20%, Consulting 80%.

*Research Facilities:* IBM 1130 computer. R&D laboratory includes variety of special test equipment and rigs and an industrial wind tunnel. Supporting services include general purpose instrumentation and test equipment, electronics laboratory, machine shop, etc.

*Research Personnel:* R. P. Bell, I. J. Billington, G. F. Bremner, W. S. Brown, R. Coladipietro, G. W. S. Gordon, H. Goulding, M. L. Nixon, J. A. Rayfield, V. Smilnieks, J. Stambolich, L. J. P. Tillson.

*Laboratory Staff:* Supervisor, technologists 6 and supporting staff.

## INDUSTRIAL RESEARCH FACILITIES

### DOMTAR, LIMITED

Research Centre, Senneville, Quebec.

*President:* Mr. T. N. Beaupré.

*Fields of Interest:* Pulp and paper — a diversified line of pulp and paper products including newsprint, fine papers, cartons, plastics, etc., chemicals, coal tar products, lime, salt, synthetic detergents, metal powders and wood preservatives. Building materials: bricks, roofing materials, lightweight concrete, fibre products, gypsum and lumber.

*Major Activity of Company:* Mfg. 100%.

*Research Facilities:* Domtar Research Centre, consisting of laboratories and pilot plant, located at Senneville, Quebec (suburb of Montreal).

*Research Personnel:* Dr. G. H. Tomlinson, Research Director; Dr. H. B. Marshall, Associate Research Director; Mr. A. M. Irvine, Head, Administration; Dr. O. L. Forgacs, Head, Pulp and Paper and Allied Building Products Section; Mr. N. C. Hauffe, Acting Head, Wood and Logging Section; Dr. E. J. Tarlton, Head, Chemicals and Allied Products Section; Dr. D. J. Whittle, Head, Engineering and Development Section.

*Laboratory Staff:* Professional 60, technical 68, administrative 14.

*Recruiting Contact:* Dr. H. B. Marshall, Associate Research Director.

### DOW CHEMICAL OF CANADA, LIMITED

Sarnia, Ontario.

*President:* L. D. Smithers.

*Fields of Interest:* Manufacture of chemicals, plastics and pharmaceuticals.

*Research Facilities:* Well equipped laboratories at Sarnia and Edmonton for research, development and testing.

*Research Personnel:* B. B. Hillary, Research Manager; H. W. Quinn, Assistant Research Manager; D. M. Young, Assistant Research Manager.

*Recruiting Contact:* W. H. White, Industrial Relations.

### DUNLOP RESEARCH CENTRE

Sheridan Park, Ontario.

## INDUSTRIAL RESEARCH FACILITIES

### DUPLATE CANADA LIMITED

First Avenue, Oshawa, Ontario.

*President:* Mr. D. S. Chant.

*Fields of Interest:* Automotive safety glass, electronic ceramic materials, (i.e., substrates and ferroelectric ceramic materials).

*Research Facilities:* Commercially available facilities include physical testing machines, spectrophotometers, optical and electron microscopes, and lasers. Special equipment is built as required.

*Research Personnel:* Dr. S. Bateson, Director of Research; Mr. J. W. Hunt, Research Laboratory Manager.

*Laboratory Staff:* Physicists 5, chemists 2, technicians 11.

*Recruiting Contact:* Mr. G. A. Hines.

### EDO (CANADA) LIMITED

P.O. Box 97, Cornwall, Ontario.

*President:* H. M. Johnson.

*Fields of Interest:* Underwater sonar systems, depth sounders, hydrophones.

*Major Activity of Company:* Mfg. 95%, R&D 2%, T&E 3%.

*Research Facilities:* Piezo-electric crystals, growing facilities for water soluble materials. Studies of the properties for electro-mechanical and electro-optical applications.

*Research Personnel:* R. S. Adhav, Ph.D., Director of Research.

*Laboratory Staff:* Electric technologist 1, research technician 1.

*Recruiting Contact:* Manager of Engineering.

### ELDORADO NUCLEAR LIMITED

151 Slater Street, Ottawa, Ontario.

*President:* Mr. W. M. Gilchrist.

*Fields of Interest:* Uranium mining, milling and refining Zirconium production.

*Major Activity of Company:* R&D 5%, Mining and Refining 95%.

*Research Facilities:* Metallurgical Laboratory at Ottawa, Ontario; Research



## INDUSTRIAL RESEARCH FACILITIES

and Development Group at Port Hope, Ontario; Mill Testing Laboratory at Eldorado, Saskatchewan.

*Research Personnel:* Gordon F. Colborne, Manager, R&D; Frank W. Melvanin, Superintendent, New Product Development; John M. Jardine, Laboratory Superintendent; J. Laurie Hart, Assistant Superintendent, Laboratories.

*Laboratory Staff:* Chemists and chemical engineers 12, metallurgists and metallurgical engineers 5, civil engineer 1, laboratory technicians 28, secretarial and library personnel 4.

*Recruiting Contact:* G. F. Colborne, Manager, R&D Division.

### ELECTRIC REDUCTION COMPANY OF CANADA LIMITED 155 Etobicoke Drive, Islington, Ontario.

*President:* Lloyd G. Lillico.

*Fields of Interest:* Elemental phosphorus and various industrial phosphates, notably sodium tripolyphosphate. Phosphatic fertilizers and feed supplements. Chemicals used in the pulp and paper industry, notably sodium chlorate and chlorine dioxide.

*Major Activity of Company:* Mfg. 100%.

*Research Facilities:* Approximately 12,000 sq. ft. of laboratory and pilot plant space located at 155 Etobicoke Drive, Islington.

*Research Personnel:* E. J. Bissaillon, Vice-President and Manager, Technical Division; R. M. O. Maunsell, Senior Technical Advisor to the President; J. D. McGilvery, Manager, Research and Development Laboratories; A. B. Foster, Manager, Research Department; G. E. Tafler, Manager, Process Development Department; H. Freedman, Manager, Pulp and Paper Research.

*Laboratory Staff:* Chemists 4, engineers 1, technicians 11, other 2.

*Recruiting Contact:* C. P. Quinn.

### ESCOTT BUILDING CORPORATION LIMITED Suite 15, 3625 Weston Road, Weston, Ontario.

*President:* George K. Escott, P.Eng.

*Fields of Interest:* Design, fabrication, erection, methodology in respect to prefabrication of building components.

*Major Activity of Company:* R&D 40%, Testing and Evaluation 10%, Consulting 50%.

*Research Facilities:* Library. Shop and equipment for process study and

## INDUSTRIAL RESEARCH FACILITIES

evaluation, access to and liaison with nearby commercial testing laboratories.

*Research Personnel:* George K. Escott, P.Eng.

*Laboratory Staff:* As required.

*Recruiting Contact:* George K. Escott, P.Eng.

### FERRANTI-PACKARD ELECTRIC LIMITED

121 Industry Street, Toronto 15, Ontario.

*President:* Mr. T. Edmondson.

*Fields of Interest:* Power distribution and metering transformers. Electricity meters. Digital electronic equipment peripherals: especially optical scanners, paper tape handling, ambient light displays. Numerical control machining and digital electronic gauging. Computer included systems for industrial and military purposes. Avionic equipment (military). Super conducting magnets.

*Major Activity of Company:* Mfg. 95%, R&D 5%.

*Research Facilities:* Dielectric phenomena in oil impregnated paper structures. Acoustic studies on power transformer noise (Power Division Laboratory). Digital electronics — Electrochemical energy converters (Fuel Cells etc.). Superconductivity Laboratory. Electromechanical development laboratory.

*Recruiting Contact:* R. M. MacDougall.

### FIBERGLAS CANADA LIMITED

HEAD OFFICE: 48 St. Clair Avenue, West, Toronto 7, Ontario.

PLANTS: Insulation — Sarnia, Ontario; Edmonton, Alberta; Montreal, P.Q. Textile — Guelph, Ontario.

*President:* Mr. A. J. Fisher.

*Fields of Interest:* Research and development in the area of fibrous composite materials (glass and other fibres, bonding materials, reinforced composites).

*Major Activity of Company:* Mfg. 97%, R&D 1.5%, T&E .5%, Other 1%.

*Research Facilities:* Technical Centre, Sarnia, Ontario.

*Research Personnel:* Mr. K. P. Gladney, B.Sc. (Chem. Eng.), Manager; Dr. F. W. Maine, Manager, Materials Research and Development.

*Laboratory Staff:* R&D professionals 10, R&D technicians 9, product evaluators and service professionals 4, product evaluators and service technicians 6.

*Recruiting Contact:* Mr. D. A. Wallace, Manager, Industrial Relations.

## INDUSTRIAL RESEARCH FACILITIES

### FLUID POWER LIMITED

282 Belfield Road, Rexdale, Ontario.

*President:* W. L. Hutchison.

*Fields of Interest:* Hydraulic controls and systems, fluidics, seals, filament winding, hydraulic deceleration.

*Major Activity of Company:* Mfg. 95%, R&D 5%.

*Research Facilities:* New laboratory in process of being established with complete capability for experimentation testing and measuring in high pressure hydraulics.

*Research Personnel:* Dr. E. Davison, Director of Research; P. M. Chambers, Research Engineer.

*Laboratory Staff:* Technician 1.

*Recruiting Contact:* Mr. W. L. Hutchison.

### GARRETT MANUFACTURING LIMITED

255 Attwell Drive, Rexdale, Ontario.

*Vice-President:* Mr. W. C. Tate.

*Fields of Interest:* Temperature control systems, static inverters, radio emergency beacons and downed aircraft locators, pneumatic signal generators, hybrid micro circuits and precision thin film resistor elements, Garrett marine products — automatic mooring wench, towing machine, self propelled vehicle.

*Major Activity of Company:* Mfg. 73%, R&D 15%, Testing and Evaluation 2%, Other 10%

*Research Personnel:* R. J. Richardson, B. W. Atkinson, C. D. Hickling, G. W. Rose, R. S. Sennett, H. A. Bisset, T. Tamagi, A. Gahunia, S. Zutrauen, R. Marshall, R. Mitchell, A. Wesolowski, M. Bernard, C. Prince, P. Gill, P. Kershaw, A. Vindasius, J. Cameron, L. Pytel.

*Laboratory Staff:* Chief of Engineering Services 1, environmental test supervisor 1, engineer associate 1, technicians — electrical-mechanical 4, supervisor of engineering support 1.

*Recruiting Contact:* Mr. M. E. White, Industrial Relations Manager.

## INDUSTRIAL RESEARCH FACILITIES

### GENERAL CONCRETE LIMITED

Highway 20 and Q.E. Way, Box 46, Station "C", Hamilton, Ontario.

*President:* P. J. Pennachetti.

*Fields of Interest:* Concrete technology; cement technology; adhesives used in building construction; concrete finishes — organic and inorganic.

*Major Activity of Company:* Mfg. 90%, R&D 5%, Testing and Evaluation 5%.

*Research Facilities:* Fully equipped concrete and cement testing and research laboratory.

*Research Personnel:* J. T. Pennachetti, Board Chairman; J. F. Boux, Chief Engineer; D. Gray, Quality Control Superintendent.

*Laboratory Staff:* Research assistants, quality control 2.

*Recruiting Contact:* J. E. Gammage, Executive Assistant.

### GENERAL FOODS, LIMITED

2200 Yonge Street, Toronto 12, Ontario.

*President:* R. S. Hurlbut.

*Fields of Interest:* R&D in areas of dry food product mixes, flavours, fats and oils, frozen food products, chemistry of coffee and coffee processing, cereal and pet food technology, microbiology and sensory evaluation methodology.

*Major Activity of Company:* Mfg. R&D (internal).

*Research Facilities:* Laboratory and pilot plant located at Cobourg, Ontario and LaSalle, Quebec.

*Research Personnel:* W. R. Mason, FCIC, Manager of Research and Engineering; Dr. T. A. Watts, Research Manager; K. M. Torrie, Laboratory Manager, 520 William Street, Cobourg, Ontario; W. R. Waring, Laboratory Manager, 795 - 90th Avenue, LaSalle, P.Q.

*Laboratory Staff:* Chemistry 12, food science 3, chemical engineering 6, dairy science 1, microbiology 3, mathematics 1, biological engineering 1, other laboratory staff 26.

*Recruiting Contact:* T. A. Watts.

## INDUSTRIAL RESEARCH FACILITIES

### GEOPHYSICAL ENGINEERING & SURVEYS, LIMITED

Box 49, Toronto-Dominion Centre, Toronto, Ontario.

*President:* N. B. Keevil, Jr.

*Fields of Interest:* Minerals exploration, using geologic, geophysical and geochemical techniques. Airborne electromagnetics: research with Barringer Research Limited. Airborne gamma-ray spectroscopy: research with McPhar Geophysics Limited.

*Major Activity of Company:* R&D 10%, Testing and Evaluation 10%, Consulting 80%.

*Research Facilities:* Small all-wood building for electromagnetic experiments. Office space in Toronto-Dominion Centre for computer programming for data reduction and interpretation.

*Research Personnel:* D. C. Fraser, Ph.D.

*Laboratory Staff:* Technologist-electronic 1, technologist-electronic in training 1.

*Recruiting Contact:* M. M. Steiner.

### THE GLIDDEN COMPANY LIMITED

351 Wallace Avenue, Toronto 9, Ontario.

*President:* Mr. J. W. Fowler — Vice-President and Managing Director.

*Fields of Interest:* Surface coatings, resins, latices, plastisols, adhesives.

*Major Activity of Company:* Mfg. 100%.

*Research Facilities:* 12,000 sq. ft. laboratory area, analytical laboratory, testing equipment.

*Research Personnel:* F. L. Steele, Technical Director; G. G. Davis, Research Chemist; E. Turpin, Research Chemist.

*Laboratory Staff:* About 30 chemists, engineers and technicians.

*Recruiting Contact:* Mr. W. E. Lennox.

### W. R. GRACE & COMPANY OF CANADA LIMITED

Cryovac Limited, 2365 Dixie Road, North, Mississauga, Ontario.

*President:* Mr. J. F. Holbrook.

*Fields of Interest:* Plastic food packaging, saran, polypropylene, irradiated



## INDUSTRIAL RESEARCH FACILITIES

polyolefins films, laminations, oriented polystyrene sheet and containers foamed polystyrene sheet and containers packaging machinery.

*Major Activity of Company:* Mfg. 97%, R&D 3%.

*Research Facilities:* Irradiation facility (electron beam).

*Research Personnel:* R. A. Bolton, B.Sc., M.Sc.; C. M. Lulham, B.Sc.; S. Tooke, Ph.D.; J. M. Holmboe, B.A.Sc.; D. G. Wallwork, B.Eng.; W. V. Saunders, B.Sc.

*Laboratory Staff:* Chemist and quality control 1, laboratory supervisor-chemistry 1, chief technician 1.

*Recruiting Contact:* Mr. W. P. Kelly, B.A.

## HUNTEC LIMITED

1450 O'Connor Drive, Toronto 16, Ontario.

*President:* Dr. Norman R. Paterson.

*Fields of Interest:* Earth Sciences includes — applied geophysics, exploration geophysics, engineering geophysics, oceanology, marine geophysics, instrumentation development design and manufacturers.

*Major Activity of Company:* Mfg. 30%, R&D 15%, Consulting 55%.

*Research Facilities:* One 20 ton research vessel based on Great Lakes.

*Research Personnel:* Mr. R. Hutchins, Mr. H. Reddering, Dr. F. Grant, Dr. A. Spector.

*Laboratory Staff:* Physicists 2, mathematicians 2, technicians 12, engineers 2.

*Recruiting Contact:* Universities.

## IBM COMPANY LIMITED

1150 Eglinton Avenue, East, Don Mills, Ontario.

*President:* Mr. J. E. Brent.

*Fields of Interest:* Data processing systems and supplies; office products and supplies; offset duplicating equipment; micro processing equipment; and, cold-typesetting equipment.

*Major Activity of Company:* Mfg., R&D, Testing and Evaluation, Consulting and Marketing.

*Research Facilities:* Facilities located on the site of the Company Headquarters in Don Mills, Ontario.

*Research Personnel:* B. B. Goodfellow, Manager, IBM Canada, Laboratory.

*Recruiting Contact:* B. B. Goodfellow, Manager, IBM Canada, Laboratory.

## INDUSTRIAL RESEARCH FACILITIES

### IMPERIAL OIL ENTERPRISES LIMITED

Research Department, P.O. Box 3022, Sarnia, Ontario.

*President:* W. O. Twaits.

*Fields of Interest:* Petroleum — processes and products. Petrochemicals — raw materials, intermediates, plastics, additives. Plastics.

*Research Facilities:* Approximately 120,000 sq. ft. of laboratory, pilot plant and engine test facilities with all necessary modern equipment and analytical tools. Also in Sarnia is the Plastics Application Laboratory in which part of the function is application research. An associated laboratory in Montreal does research on building products and there are producing and exploration labs in Calgary.

*Research Personnel:* Dr. G. W. Gurd, Manager; Dr. C. H. Caesar, Deputy Manager; Mr. R. B. Berkoff, Manager, Operations Division; Dr. C. T. Steele, Manager, Chemicals Division; Mr. J. L. Tiedje, Manager, Petroleum Division.

*Laboratory Staff:* Professionals 75, supporting staff 170.

*Recruiting Contact:* Dr. C. H. Caesar.

### INTERNATIONAL CELLULOSE RESEARCH LIMITED

Hawkesbury, Ontario.

*President:* Mr. Geoffrey D. Hughson.

*Fields of Interest:* R&D in fields of pulping, bleaching, papermaking, wood chemistry, by-products, etc., related to the manufacture of newsprint, kraft paper and board, dissolving pulp, building products and other products of the parent company, Canadian International Paper Company.

*Major Activity of Company:* R&D 94%, Testing and Evaluation 6% for parent company, Canadian International Paper Company.

*Research Facilities:* Laboratories for applied and fundamental research, and pilot plants for pulping, bleaching and end product evaluation in Hawkesbury; pilot plants for pulping and papermaking in Gatineau, Quebec.

*Research Personnel:* F. R. Charles, Vice-President and Director of Research; W. B. Cranford, Manager, Process Development Division;

## INDUSTRIAL RESEARCH FACILITIES

E. J. Howard, Consulting Research Director; Dr. D. B. Mutton, Director, Basic Research and Special Services; D. T. Roy, Manager, Gatineau Division.

*Laboratory Staff:* Chemists 31, chemical engineers 26, physicists 2, botanists 3, mechanical engineers 3, technicians 126, others 34; total 225.

*Recruiting Contact:* Mr. F. R. Charles, Vice-President and Director of Research.

### JOHNSON MATTHEY & MALLORY LIMITED

110 Industry Street, Toronto 15, Ontario.

*President:* J. E. Shirreff.

*Fields of Interest:* Tantalum and aluminum electrolytic capacitors, precious metals and alloys, timer switches, welding products, brazing materials, noble metal catalysts.

*Major Activity of Company:* Mfg.

*Research Facilities:* The Research and Development Laboratory is located in the plant at 110 Industry Street.

*Research Personnel:* P. L. Bourgault, Ph.D.; G. H. Fraser, Ph.D.; R. E. Ranford, M.A.Sc.; J. Batelaan, B.A.Sc.

*Laboratory Staff:* Technologists 3.

*Recruiting Contact:* P. L. Bourgault.

### JOHN LABATT LIMITED

150 Simcoe Street, London, Ontario.

*President:* J. H. Moore.

*Fields of Interest:* Beer and ale, wines, flour, starch, gluten, packaged foods, food and feed supplements, fine chemicals.

*Major Activity of Company:* Mfg. 100%.

*Research Facilities:* Animal Science Laboratories — London, Ontario. Experimental Farm — Putnam, Ontario. Beverage Science Laboratories — London, Ontario. Food Technology Laboratories — Mon-



## INDUSTRIAL RESEARCH FACILITIES

treal, Quebec. Microbiological Science Laboratories — London, Ontario. Organic Chemistry Laboratories — Montreal, Quebec.

*Research Personnel:* Dr. I. R. Sibbald, Director of Animal Science; Dr. B. Shelton, Manager of Beverage Science; Dr. J. Holme, Director of Research (Food, Starch, Gluten); J. W. Barlow, Director of Product Development (Packaged Foods); Dr. M. F. Walmsley, Director of Microbiological Science; Dr. C. Podesva, Director of Research (Organic Chemistry).

*Laboratory Staff:* Scientists 31, technicians 46.

*Recruiting Contact:* Mr. D. G. Veale.

### LECO INDUSTRIES LIMITED

70 Barbados Boulevard, Scarborough, Ontario.

*President:* Mr. W. E. Lynes.

*Fields of Interest:* Research and development of novel plastic films for the food and industrial packaging industry.

*Major Activity of Company:* Mfg. 100%.

*Research Facilities:* Laboratory for manufacture and evaluation of experimental plastic films.

*Research Personnel:* Dr. Warren Baker.

*Laboratory Staff:* Engineers 2, technicians 3.

*Recruiting Contact:* Dr. Warren Baker.

### LEIGH INSTRUMENTS LIMITED

P.O. Box 820, Carleton Place, Ontario.

*President:* J. J. Shepherd.

*Fields of Interest:* Aircraft location and recording systems including airfoil delivery, crash position indicator and data recording systems; aircraft instruments including automatic master heading control, servo repeater amplifier and servoed altimeters; commercial products including forestry survey altimeter, fluoride analyzer, and oxygen probe are currently in production or under development.

*Major Activity of Company:* Mfg. 75%, R&D 15%, T&E 10%.

*Research Facilities:* The environmental laboratory contains six AGREE temperature chambers, each fitted with vibration machines, one large

## INDUSTRIAL RESEARCH FACILITIES

temperature altitude chamber and two high frequency vibration machines. Aeronautics, recorder and instrument development facilities are available.

*Research Personnel:* J. R. B. Steacie, Vice-President, Director of Engineering; M. Price, Manager, Commercial Products; G. Dimock, Assistant to Director of Engineering; J. R. Williams, Chief Engineer (Crash Position Indicator/Recorder Group); H. Aass, Engineering Manager, Aeronautics Development Group; G. Ireland, Group Engineer, Instrumentation Group.

*Laboratory Staff:* Engineers and technicians 100.

*Recruiting Contact:* J. R. B. Steacie, Vice-President, Director of Engineering.

### ERNST LEITZ (CANADA) LIMITED

122 Ellen Street, Midland, Ontario.

*President:* Mr. Guenther Leitz.

*Fields of Interest:* Geometric optics with emphasis on photography; Optical Instruments with emphasis on fire control; Gaslasers and accessories; Interferometry.

*Major Activity of Company:* Mfg. 80%, R&D 10%, T&E 10%.

*Research Facilities:* IBM 1130 Computer; SIRA-Beck Modulation-Transfer-Analyzer; Interferometers, Spectrometers, Optical benches.

*Names of Research Personnel:* W. Mandler, Dipl.-Phys.; J. Consitt, M.A.; T. Malinowski, Opt.Eng.; B. Munro, B.A.

*Laboratory Staff:* Optical designers 2, laboratory assistant 1.

### LEVER BROTHERS LIMITED

1 Sunlight Park Road, Toronto 8, Ontario.

*President:* John C. Lockwood.

*Fields of Interest:* Manufacturing and marketing of soaps, detergents, toiletries, edible fats and oils and wax polishes. Research and development of new and improved consumer and industrial products.

*Major Activity of Company:* Mfg. 50%, R&D 5%, Testing & Evaluation 5%, Other 40%.

*Research Personnel:* Stanley O. Winthrop, Director of Research and

## INDUSTRIAL RESEARCH FACILITIES

Development; Keith Clark, Research Manager; Charlie O'Sullivan, Research Manager.

*Laboratory Staff:* Chemists 12, Chemical engineers 6, technicians 14, other lab staff 4.

*Recruiting Contact:* Ed. MacKay, Personnel Department.

LITTON SYSTEMS (CANADA) LIMITED (LITTON INDUSTRIES)  
25 Cityview Drive, Rexdale, Ontario.

*President:* J. M. Bridgman.

*Fields of Interest:* Airborne navigation systems; tactical data systems; bombing computer systems; aerospace ground equipment; commercial special purpose control systems.

*Major Activity of Company:* Mfg. 75%, R&D 10%, T&E 5%, Other 10%.

*Research Facilities:* 10,000 square feet.

*Research Personnel:* Dr. J. J. Green, Director of Research; L. A. Borth, Director of Engineering.

*Laboratory Staff:* Engineers 30, technicians 50.

*Recruiting Contact:* Dr. J. J. Green.

M & T PRODUCTS OF CANADA LIMITED  
670 Strathearne Avenue, North, Box 211, Station "C", Hamilton, Ontario.

*President:* Mr. C. J. Beasley.

*Fields of Interest:* Tin Chemistry.

*Major Activity of Company:* Mfg. 95%, R&D 5%.

*Research Facilities:* Completely equipped laboratory.

*Research Personnel:* R. D. Fraser, Vice-President and General Manager; P. D. Goulden, Research Director.

*Laboratory Staff:* Chemical engineer 1, chemist 1, technicians 3.

*Recruiting Contact:* P. D. Goulden.

## INDUSTRIAL RESEARCH FACILITIES

### MALLORY BATTERY COMPANY OF CANADA LIMITED

2333 North Sheridan Way, Sheridan Park, Ontario.

*President:* Mr. K. R. Brands.

*Fields of Interest:* Primary and secondary alkaline dry cells; high energy density power sources; research and development of power sources for special operating conditions.

*Major Activity of Company:* Mfg. 95%, R&D 5%.

*Research Facilities:* Power sources laboratory with facilities for research on electrochemical, powder technology, and metallurgical aspects of electrochemical power generation.

*Research Personnel:* Dr. F. J. Kelly, Manager, Research; Dr. F. Przybyla, Research Scientist.

*Laboratory Staff:* Scientists 2, technologists 2, technicians 4.

*Recruiting Contact:* Dr. F. J. Kelly.

### MAPLE LEAF MILLS LIMITED

417 Queen's Quay West, Toronto 2B, Ontario.

*President:* G. M. MacLachlan.

*Fields of Interest:* Animal feeds, grain, flour, baking grocery products, vegetable oils, resins.

*Research Facilities:* Research laboratory and research farm.

*Research Personnel:* W. H. Hoffman, Director of Research. W. D. Morrison, Director, Nutrition and Research.

*Laboratory Staff:* Professionals 8, technicians 16.

*Recruiting Contact:* N. P. Vallieres, Director of Industrial Relations.

### HOGG AND LYTLE SEEDS, DIVISION OF MAPLE LEAF MILLS LIMITED

Oakwood, Ontario.

*Fields of Interest:* Farm seeds and turf grass seeds, research projects: development of improved varieties hybrid corn and forages.

*Research Facilities:* Land and equipment at: Crop Research Centre, Maple Leaf Mills Limited, R.R. #2, Georgetown, Ontario, and; Crop Re-

## INDUSTRIAL RESEARCH FACILITIES

search Station, Maple Leaf Mills Limited, P.O. Box 9, Wallaceburg, Ontario.

*Research Personnel:* Dr. W. E. Sieveking, Director, Crop Research. Jiri Jacobec, Technician. John Heatherington, Technician.

*Recruiting Contact:* T. Szego, General Manager, Hogg & Lytle Seeds, Oakwood, Ontario.

### MARSLAND ENGINEERING LIMITED

350 Weber Street, North, Waterloo, Ontario.

*President:* Stanley Marsland.

*Fields of Interest:* 1) Electro-mechanical-optical displays and recorders; meteorological instrumentation (visibility measuring devices, etc.); audio equipment; components (loudspeakers and transformers); ordnance items (mechanical and electronic fusing).

*Major Activity of Company:* Mfg. 90%, R&D 10%.

*Research Facilities:* Electronics laboratories, mechanical, environmental, photographic laboratories, engineering, drafting, in excess of 15,000 square feet.

*Research Personnel:* F. D. Leeson, Chief Development Engineer. A. S. Armstrong, W. Doran, F. Moritz, B. Fairey, G. Moogk, W. Walker, J. Conner, P. Ridout, L. Phillips.

*Laboratory Staff:* Environmental engineer 1, development engineers 2, systems engineers 3, electrical technician 1, electro-mechanical engineer 1, electronic engineers 4, chemical engineers 1, draughtsmen 6, technical writing staff 4.

*Recruiting Contact:* Personnel Manager, W. Marsland.

### NORTHERN ELECTRIC RESEARCH AND DEVELOPMENT LABORATORIES

P.O. Box 3511, Station "C", Ottawa, Ontario

*President:* V. O. Marquez.

*Fields of Interest:* Telecommunications equipment, solid state, technology and electronics.

*Major Activity of Company:* Mfg. 95%, R&D 5%.



## INDUSTRIAL RESEARCH FACILITIES

*Research Facilities:* Central laboratories in Ottawa and six regional laboratories in other Canadian centres.

*Research Personnel:* W. R. Johnston, Vice-President. Dr. F. S. Eadie, Director, Research.

*Laboratory Staff:* Engineers 500, technologists 500.

*Recruiting Contact:* V. H. Earle, Personnel Superintendent.

## NORTHERN RADIO MANUFACTURING COMPANY LIMITED 1950 Bank Street, Ottawa 10, Ontario.

*President:* Mr. J. G. Macmillan.

*Fields of Interest:* Data transmission and related fields.

*Major Activity of Company:* Mfg. 80%, R&D 20%.

*Research Facilities:* 1,000 square feet well equipped lab for our fields of endeavour.

*Research Personnel:* A. W. Y. DesBrisay, PhD., Chief Engineer.

*Laboratory Staff:* Engineers 3, technicians 3, draughtsman 1, secretary 1.

*Recruiting Contact:* J. G. Macmillan, President.

## NORTON RESEARCH CORPORATION (CANADA) LIMITED P.O. Box 690, Chippawa, Ontario.

*President:* Mr. John Jeppson.

*Fields of Interest:* Development of new businesses through technical innovations, particularly in the fields of abrasives, refractories, electronics, and high temperature technology (1500-2800°C).

*Major Activity of Company:* R&D 75%, Testing and Evaluation 20%, Consulting 5%.

*Research Facilities:* Modern laboratories for R&D on electronic materials and devices, abrasives, and refractories, including analytical, X-ray and microscopic labs. Pilot plant facilities for projects involving arc

## INDUSTRIAL RESEARCH FACILITIES

furnaces, high frequency furnace, chemical and/or ceramic engineering processes.

*Research Personnel:* Dr. A. F. McKay, Vice-President and Managing Director. Dr. G. L. Martin, Vice-President.

*Laboratory Staff:* Engineers — 8 chemical, 2 metallurgical, 2 electrical, 1 mechanical.

Scientists — 3 chemical, 1 physicist, 2 mineralogist, 1 geologist, technicians 30, other 10.

*Recruiting Contact:* Dr. A. F. McKay, Vice-President and Managing Director.

### ORENDA LIMITED

Box 6001, Toronto International Airport, Malton, Ontario.

*President:* F. P. Mitchell.

*Fields of Interest:* Major Interest: gas turbine design and development. Secondary Interest: engineering services (Nuclear Products, Research, Development and Manufacture; Test Engineering, Experimental Manufacture and Commercial Testing Laboratories), Chemistry, Metallurgy, Welding and Instrument.

*Major Activity of Company:* Mfg. 90%, R&D 4%, Testing and Evaluation 6%.

*Research Facilities:* Complete testing laboratories including environmental facilities, prototype manufacture assembly and testing — total 45,000 square feet, Department of National Defence approval of most facilities.

*Research Personnel:* B. A. Avery, Director of Engineering. D. Caple, Engineering Operations Manager. H. N. Isaac, Engineering Services Manager (nuclear and testing).

*Laboratory Staff:* Engineers 30, laboratory specialists 6, laboratory technicians 50.

*Recruiting Contact:* Personnel Department.

## INDUSTRIAL RESEARCH FACILITIES

### PICKER X-RAY MANUFACTURE, LIMITED

26 Victoria Crescent, Bramalea, Ontario.

*President:* C. K. Bridgeman.

*Fields of Interest:* Medical X-ray equipment.

*Major Activity of Company:* Mfg. 50%, R&D 30%, Testing and Evaluation 20 .

*Research Facilities:* 4,000 square feet of mechanical and electrical laboratories.

*Research Personnel:* J. W. Smit, Chief Engineer, Glen C. Miller, Electronics Engineer.

*Laboratory Staff:* Engineering technologists 4.

*Recruiting Contact:* C. K. Bridgeman.

### POLYMER CORPORATION LIMITED

Sarnia, Ontario.

*President:* Mr. E. Ralph Rowzee.

*Fields of Interest:* Manufacture of synthetic rubbers, latices, and associated polymers.

*Major Activity of Company:* Mfg. 96%, R&D 4% .

*Research Facilities:* Fully equipped laboratories and pilotplants for synthesis, evaluation and process development of company products.

*Research Personnel:* E. J. Buckler, Vice-President. L. A. McLeod, Manager of Research and Development. E. E. Gale, Manager, Market Development. R. A. Stewart, Manager, Latex Development. J. W. Hellman, Manager, Resins and Plastics Development.

*Recruiting Contact:* Mr. R. J. Clifford, Salaried Personnel Manager.

### PRECISION ELECTRONIC COMPONENTS LIMITED

19 Hafis Road, Toronto 15, Ontario.

*President:* Mr. A. Simoni.

*Fields of Interest:* Manufacture of electronic components. Research to improve these components.

*Major Activity of Company:* Mfg. 80%, R&D 10%, T&E 10% .

*Research Facilities:* Complete environmental testings laboratory for electronic components. Chemical Laboratory.

*Research Personnel:* Ben Kates, Chemist. Ron Hanna, Research Engineer.



## INDUSTRIAL RESEARCH FACILITIES

Leon Ginsberg, Product Engineer. Trinidad Pates, Chemical Technologist.

*Laboratory Staff:* Supervising technician 1, laboratory technician 1, laboratory assistant 1.

*Recruiting Contact:* Mr. A. Simoni.

### THE PROCTER AND GAMBLE COMPANY OF CANADA, LIMITED

Burlington Street East, Hamilton, Ontario.

*President:* Mr. G. Williams, P&G Building, 2 St. Clair Avenue West, Toronto, Ontario.

*Fields of Interests:* Soaps and detergents, edible oils and shortenings, toilet goods.

*Major Activity of Company:* Manufacturing and marketing.

*Research Facilities:* Have laboratory and pilot plant facilities as well as administrative facilities for a staff of approximately 100 people.

*Recruiting Contact:* Mr. A. F. Howey. (Hamilton)

### REICHHOLD CHEMICALS (CANADA) LIMITED

1919 Wilson Avenue, Weston, Ontario.

*President:* Mr. G. L. Hagen.

*Fields of Interest:* Synthetic resins for plastics, moulding adhesives, surface coatings and chemicals, such as formaldehyde.

*Major Activity of Company:* Mfg. 100%.

*Research Facilities:* Polymer research laboratories in Vancouver, B.C. and Toronto, Ontario.

*Research Personnel:* Dr. S. Kambanis, Dr. H. Kucharska, Dr. C. Rickard, Dr. R. C. Vasishth.

*Recruiting Contact:* Dr. R. C. Vasishth, Research Director.

### RIO ALGOM MINES LIMITED (Mining Division)

Head Office, 120 Adelaide Street West, Toronto, Ontario.

*President:* Mr. R. D. Armstrong.

*Fields of Interest:* Applied research and development in recovery of metals

## INDUSTRIAL RESEARCH FACILITIES

from ores and subsequent processing thereof. Also custom assaying and metallurgical testing, primarily for associated companies.

*Major Activity of Company:* Mfg. 70%, R&D 10%, Consulting 10%  
Other Management Service 10%.

*Research Facilities:* Laboratories and pilot plants at Elliot Lake, Ontario.

*Research Personnel:* M. E. Grimes, Manager Research. J. W. Fisher, Research Superintendent. E. Barnes, Research Superintendent.

*Laboratory Staff:* Chemical engineers 3, metallurgical engineers 3, chemists 3, other lab staff 19.

*Recruiting Contact:* M. E. Grimes, Manager, Research.

## ST. LAWRENCE STARCH COMPANY, LIMITED 141 Lakeshore Road East, Port Credit, Ontario.

### SHERMAN AND ULSTER LIMITED (formerly, Empire Laboratories) 301 Lansdowne Avenue, Toronto, Ontario.

*President:* Dr. Bernard C. Sherman.

*Fields of Interest:* Research and development of fine chemical manufacturing processes.

*Major Activity of Company:* Mfg. 67%, R&D 15%, T&E 15%, Consulting 3%.

*Research Facilities:* Fully equipped chemical research laboratories and pilot plant.

*Research Personnel:* Frank M. Martin, Research Director and Plant Manager. William C. Thomas, Pilot Plant Supervisor. Anthony A. Raudon, Research Chemist.

*Laboratory Staff:* Chief chemist 1, chemists 4, technicians 8.

*Recruiting Contact:* Frank M. Martin, Research Director.

## INDUSTRIAL RESEARCH FACILITIES

### SINCLAIR RADIO LABORATORIES, LIMITED

122 Rayette Road, Maple, Ontario.

*President:* Professor G. Sinclair.

*Fields of Interest:* Antennas, filters, control systems, and associated hardware.

*Major Activity of Company:* Mfg. 75%, R&D 20%, Testing and Evaluation 3%, Consulting 2%.

*Research Facilities:* Antenna development and testing range aid laboratory, filter laboratory, intermodulation test bed.

*Research Personnel:* Dr. W. V. Tilston, Director of Research. I. A. Fraser, Engineering Manager. A. H. Secord, Senior Engineer. F. G. Buckles, Senior Engineer. G. Graham. J. Lainevoov. W. McGladdery.

*Laboratory Staff:* Technologists 6.

*Recruiting Contact:* I. A. Fraser, Engineering Manager.

### SPAR AEROSPACE PRODUCTS LIMITED

Box 6022, Toronto International Airport, Malton, Ontario.

*President:* Mr. L. D. Clarke.

*Fields of Interest:* Research, design and development of antennas and booms for space craft, solid state power conditioning devices and electro optical systems.

*Major Activity of Company:* Mfg. 50%, R&D 20%, Testing and Evaluation 5%, Other 25%.

*Research Facilities:* Mechanical, electronic, and physics (electro-optical) and metallurgical laboratories.

*Research Personnel:* H. S. Kerr, Chief Engineer. H. R. Warren, Research Space Systems. K. Farrell, Research Space Antennas and Booms. T. Ussher, Research Power Conditioning.

*Laboratory Staff:* Mechanical 7, metallurgical 2, power conditioning 6, electro-optical 5.

*Recruiting Contact:* E. Nield, Director, Employee Relations.

## INDUSTRIAL RESEARCH FACILITIES

### SPARTON OF CANADA LIMITED

P.O. Box 2125, 100 Elm Street, London, Ontario.

*President:* N. C. Eiloart.

*Fields of Interest:* A.S.W. systems, particularly design and production of sonobuoy transmitters, receivers and hydrophones.

*Major Activity of Company:* Mfg. 90% , R&D and T&E 10% .

*Research Facilities:* Comprehensive electronic equipment to satisfy requirements in 4 above. Deep water and high pressure water environments.

*Research Personnel:* B. Graham, J. P. Chevalier, J. W. Maradyn.

*Recruiting Contact:* B. Graham.

### SPRAGUE ELECTRIC OF CANADA LIMITED

10 Bertal Road, Toronto 15, Ontario.

### STONE AND WEBSTER CANADA LIMITED

60 Adelaide Street East, Toronto 1, Ontario

*President:* R. S. Boyd.

*Fields of Interest:* Engineering, design, construction and/or project management of laboratories and other installations.

*Major Activity of Company:* Feasibility studies and reports; appraisals; consulting engineering; design and construction — 100% .

*Recruiting Contact:* G. S. Currie, Development Manager.

### THOMSON RESEARCH ASSOCIATES LIMITED

53 Shaw Street, Toronto 3, Ontario.

*President:* John R. Woods.

*Fields of Interest:* Textiles, particularly wool and cotton research as well as finishing of all fibres. Germicides, as applied to textiles, leather, plastics, paint. Testing, road building materials (asphalt, concrete); textiles, all phases.

*Major Activity of Company:* Mfg. 15% , R&D 50% , T&E 25% , Consulting 10% .

## INDUSTRIAL RESEARCH FACILITIES

*Research Facilities:* 53 Shaw Street, Toronto, Ontario. 70 Crawford Street, Toronto, Ontario.

*Research Personnel:* Mr. N. H. Cruickshank, M.Sc., Vice-President and General Manager. Mr. P. J. Radford, B.Sc., Chief Chemist. Mr. F. Mains, B.Sc., B.A.Sc., Research Scientist. Mr. G. McLeod, B.A.Sc., Research Scientist. Miss Nancy Zid, B.Sc., Research Assistant.

*Laboratory Staff:* Technicians 4.

*Recruiting Contact:* N. H. Cruickshank.

### TMC (CANADA) LIMITED

R.R. # 5, Ottawa, Ontario.

*President:* D. V. Carroll.

*Fields of Interest:* Research and development of radio transmitting and receiving and auxiliary equipments in the ELF through H/F spectrum. Specializing in single sideband and antenna multicoupler fields also in specialized communication fields.

*Major Activity of Company:* Mfg. 65%, R&D 15%, T&E 10%, Consulting 10%.

*Research Facilities:* 8,000 sq. ft. in modern plant on 8 acres of property. Screened room environmental chambers and complete instrumentation for communications R&D. Modern metal shop.

*Research Personnel:* D. V. Carroll, President. J. C. Adair, Vice-President. K. Holt, Technical Director. A. M. Sadik, Engineer.

*Laboratory Staff:* Engineers 2, technicians 4, and supporting draughting and library facilities.

*Recruiting Contact:* D. V. Carroll, President.

### UNION CARBIDE CANADA LIMITED

123 Eglinton Avenue East, Toronto 12, Ontario.

*President:* Mr. J. S. Dewar.

*Fields of Interest:* Manufacture of chemicals and resins.

*Major Activity of Company:* Mfg. 100%.

*Research Personnel:* G. L. Bata, Director of Development. J. W. Donaghy, Technology Manager, Chemicals. H. R. Larsen, Technology Manager, Thermoplastics. R. S. Zalkowitz, Technology Manager, Thermo-setting

## INDUSTRIAL RESEARCH FACILITIES

Products. J. E. Hazell, Senior Research Scientist, Physical Chemistry and Processes. K. P. Singh, Senior Research Scientist, Organic Chemistry.

*Laboratory Staff:* Technicians 18, development assistants 5, technical specialists 3, group leaders 4, development engineers and chemists 18, research scientists 2.

*Recruiting Contact:* Mr. J. B. Ward.

### UNIROYAL LIMITED

P.O. Box 130, Place d'Armes, Montreal, P.Q.

*President:* E. A. Martin.

*Fields of Interest:* Exploratory and applied organic, physical and polymer chemistry and technology of products and processes related to monomers, resins, elastomers, textiles, rubber and industrial chemicals, agricultural chemicals.

*Major Activity of Company:* Mfg. 95%, R&D and other 5%.

*Research Facilities:* Central research laboratories in Guelph, with associated divisional development laboratories, pilot plants, etc., in Kitchener (tires, rubber and textile products, crash pads, coated fabrics) and in Elmira (chemicals, resins).

*Research Personnel:* Professionals (research chemists, physicists, engineers) 55, supporting technicians and laboratory staff in central research laboratories, Guelph, 35.

*Laboratory Staff:* Professional (engineers, chemists) 35, supporting technicians and laboratory staff in divisional development laboratories in Kitchener and Elmira, 45.

*Recruiting Contact:* J. C. R. Warren, Co-ordinator, Research and Development.

### VARIAN ASSOCIATES OF CANADA LIMITED

45 River Drive, Georgetown, Ontario.

*President:* Mr. B. H. Breckenridge.

*Fields of Interest:* Development of reflex klystrons, travelling wave tubes,



## INDUSTRIAL RESEARCH FACILITIES

millimeter klystrons and extended interaction oscillators. Development of long life, high current density thermionic emitters.

*Major Activity of Company:* Mfg. 80% , R&D 20% .

*Research Facilities:* Complete range of facilities required for the design, manufacture and testing of small microwave tubes. Chemistry and metallurgical laboratory.

*Research Personnel:* M. Viant, (millimeter devices). K. A. Macdonald, (thermionic emission). C. Searle, (travelling wave tubes). K. Beecker, (waveguide components). T. Smith, (reflex klystrons).

*Laboratory Staff:* Electrical engineers 6, physical chemist 1, technicians 8.

*Recruiting Contact:* Mr. R. B. Wilson.

### WARNER-LAMBERT CANADA LIMITED

2200 Eglinton Avenue East, Scarborough, Ontario.

*President:* D. M. McCaskill.

*Fields of Interest:* Research on medium and long term toxicity of new drugs and in Basic Sciences, mainly cell biology and experimental pathology.

*Major Activity of Company:* R&D 100% .

*Research Facilities:* Warner-Lambert Research Institute of Canada, Limited, Sheridan Park, Ontario. 30,000 square feet of laboratories and animals quarters with completely equipped facilities for toxicity testing and basic research.

*Research Personnel:* Dr. George Lumb, Vice-President, Director. Dr. Andrew Diosy, Clinical Research Director. Dr. F. A. de la Iglesia, Toxicology Director. Mr. J. R. Stokes, Senior Scientist and Business Manager. Dr. J. C. Sosa-Lucero, Biochemist Scientist.

*Laboratory Staff:* Technologists 20, pathologist 1, veterinarian 1, other staff 19.

*Recruiting Contact:* Dr. George Lumb, Vice-President, Director.

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